

REMARKS

Claims 1, 3-7, and 9-16 were pending in the application. Claims 1, 7, and 9 have been amended. Claims 17 and 18 have been added. No new matter has been introduced. Thus, claims 1, 3-7, and 9-18 are submitted for reconsideration at this time.

Claim Objections

Claim 1 is objected to for a typographical error in repeating the first two lines thereof. Claim 1 has been represented in this Amendment & Reply. Withdrawal of the objection is solicited.

Rejections under 35 U.S.C. §102(b)

Claims 1, 3, 6, and 8 stand rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Reference JP 08-197,626 ("JP '626" hereafter). As the Office Action has acknowledged the cited art fails to disclose certain features of claims 1, 3, and 6 in the rejection under 35 U.S.C. §103(a) of the same claims, this rejection is overcome with respect to claims 1, 3, and 6 for at least the differences acknowledged by the Office Action. Additionally, claim 8 was previously canceled, and thus this rejection is moot with respect to claim 8. Withdrawal of the rejection under 35 U.S.C. §102(b) is solicited.

Rejections Under 35 U.S.C. §103(a)

Claims 1, 3-7, and 9-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP '626 in view of U.S. Patent No. 5,308,424 to Sasaki ("Sasaki" hereafter). Independent claims 1 and 9 (and the claims dependent thereon) are considered to be allowable for the reasons set forth below in the "Response to Applicant's Arguments" section. Independent claim 7 has been amended to more fully recite features that distinguish over the presently cited art. Support for the amendment to claim 7 can be found, for example, on page 13, line 26 to page 14, line 4; page 10, lines 17 to 23; page 19, lines 19 to 25; page 20, lines 14 to 17; and page 21, lines 2 to 4. Applicant respectfully traverses the rejection of claim 7 as amended for at least the following reasons.

The presently cited art fails to disclose or suggest feeding reinforcing nonwoven fiber bundles together with the thermoplastic resin fibers so that the reinforcing nonwoven fiber bundles are arranged in one direction together with the thermoplastic

resin fibers to produce the nonwoven fiber bundle layer of unidirectional reinforcing fiber bundles together with the thermoplastic resins, as presently claimed.

Additionally, the cited art fails to disclose or suggest nonwoven fiber bundle layers stacked in layers that are heated and pressed, thereby bonding them to each other with the thermoplastic resin fibers, as presently claimed.

Due to the aforementioned features, the thermoplastic resin fibers in the presently claimed invention are linearly adhered to the surface of the reinforcing nonwoven fiber bundles (see Figure 1). Additionally, Figure 5 shows the nonwoven fiber bundle layers bonded to each other with the thermoplastic resin fibers.

As such, the claimed method produces nonwoven fabric with desirable properties (see page 29, line 22 to page 31, line 17). More specifically, because the fiber bundles are bonded to each other with the thermoplastic resin fibers, impregnation with matrix resin is satisfactorily conducted, and both thermosetting and thermoplastic resins can be employed. Moreover, the content of the reinforcing nonwoven fibers can be increased, and the resulting nonwoven fabric is excellent in mechanical characteristics. Furthermore, because the nonwoven fiber bundles are laminated and bonded to each other with the thermoplastic resin fibers, the resulting nonwoven fabric is extremely flexible and superior to conventional products.

As the presently cited art fails to disclose or suggest all of the claimed features, claim 7 is considered to be allowable. Withdrawal of the rejection under 35 U.S.C. §103(a) is solicited.

Response To Applicant's Arguments

In response to Applicant's arguments of November 13, 2002, that the cited art fails to disclose or suggest the claimed nonwoven fabric, the Office Action refused to give this feature patentable weight because "the recitation that the composite sheet is a nonwoven fabric is in the preamble." Applicant has thus amended the body of claims 1, 7, and 9 to recite the nonwoven feature, and requests that the Examiner give this feature patentable weight. Moreover, while the Office Action asserts that the present claims do not preclude the presence of additional layers, the claims do recite *a plurality of nonwoven layers*, which JP '626 fails to disclose or suggest. Claim 7 is considered to be allowable over the cited art for this additional feature, in view of Applicant's arguments of November 13, 2002.

New Claims 17 and 18

New claims 17 and 18 have been added to more fully recite features of the present invention. Support for new claims 17 and 18 can be found, for example, in claims 9 and 10. Claims 17 and 18 are dependent upon claim 7, and are considered to be allowable for at least the aforementioned reasons with respect to claim 7, in addition to the further patentable features recited therein. Allowance of claims 17 and 18 is earnestly solicited.

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date April 21, 2003

By



FOLEY & LARDNER
Washington Harbour
3000 K Street, N.W., Suite 500
Washington, D.C. 20007-5143
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Harold C. Wegner
Attorney for Applicant
Registration No. 25,258

Daniel L. Girdwood
Agent for Applicant
Registration No. 52,947

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge deposit account No. 19-0741 for any such fees; and applicant hereby petitions for any needed extension of time.

MARKED UP VERSION SHOWING CHANGES MADE

1. (Twice Amended) A nonwoven fabric which has at least three fiber bundle layers comprising:

unidirectional reinforcing nonwoven fiber bundles, wherein the directions of the reinforcing nonwoven fiber bundles in the respective nonwoven fiber bundle layers differ between the adjacent layers; and

a thermoplastic resin component that is randomly and partially adhered to the surface of the reinforcing nonwoven fiber bundles in at least one fiber bundle layer, wherein the nonwoven fiber bundle layers are bonded to each other with the thermoplastic resin component.

7. (Twice Amended) A method for producing a nonwoven fabric which has at least three fiber bundle layers comprising unidirectional reinforcing fiber bundles, the method comprised of:

feeding reinforcing nonwoven fiber bundles together with thermoplastic resin fibers and arranging the reinforcing nonwoven fiber bundles and the thermoplastic resin fibers together in one direction;

placing the resulting bundles together with the thermoplastic resin fibers in parallel to form a nonwoven fiber bundle layer of unidirectional reinforcing fiber bundles together with the thermoplastic resin fibers;

stacking the nonwoven fiber bundle layer with a nonwoven fiber bundle layer of reinforcing nonwoven fiber bundles together with the thermoplastic resin fibers so that the layers are different in directions of the bundles from each other; and

heating and pressing the nonwoven fiber bundle layers stacked in layers to bond the nonwoven fiber bundle layers to each other with the thermoplastic resin fibers.

9. (Amended) A nonwoven fabric, comprising:
- a first nonwoven reinforcing fiber bundle layer having nonwoven reinforcing fibers arranged in a substantially weft direction;
 - a second nonwoven reinforcing fiber bundle layer having nonwoven reinforcing fibers arranged in a first substantially oblique direction; and
 - a third nonwoven reinforcing fiber bundle layer having nonwoven reinforcing fibers arranged in a substantially warp direction.